

# ANSWER KEY

Solve the following proportions (two equal ratios): Cross multiply,  $\frac{a}{b} = \frac{c}{d} \rightarrow ad = bc$

5.  $\frac{d}{30} = \frac{9}{10}$

$d = 27$

36.  $\frac{3}{6} = \frac{b}{24}$

$b = 12$

37.  $\frac{104}{b} = \frac{13}{10}$

$b = 80$

$10d = 9 \cdot 30$

$6b = 3 \cdot 24$

$13b = 10 \cdot 104$

38. Mr. Wong is looking at the plans for his new house. According to the plan, 2.4 inches equals 12 feet. If the length of a wall is 16 feet, how long is the wall on the plan? (Hint: Use a proportion to relate actual to model dimensions)

$\frac{2.4 \text{ in}}{12 \text{ ft}} = \frac{x}{16 \text{ ft}}$

$12x = 2.4 \cdot 16$

$x = 3.2 \text{ in.}$

39. Darren can paint 4 fence sections in 2.3 hours. How long will it take him to paint 64 sections?

$\frac{4 \text{ sections}}{2.3 \text{ hrs}} = \frac{64}{x \text{ hrs.}}$

$4x = 2.3 \cdot 64$

$x = 36.8 \text{ hrs.}$

**Percent Change:** Solve by using decimals or proportions. Remember, % change =  $\frac{\text{New} - \text{Original}}{\text{Original}} * 100\%$

40. Original: \$19.30 New: \$23.30

$\frac{23.30 - 19.30}{19.30} * 100\%$

(Circle) Increase or Decrease

% Change (to nearest tenth) =  $20.7$

**Total Price:** Convert % to decimals. Remember, total price = cost + tax

41. groceries: \$87.23  
tax: 6.5%

$TAX = 87.23 * .065$   
 $= 5.67$

Total price =  $\$92.90$

42. radio: \$59.00  
discount: 20%

$DISCOUNT = 59.00 * .20$   
 $= 11.80$

Total price =  $\$47.20$

43. shirt: \$28.00  
discount: 10%  
tax: 6.5%

$TAX = 25.20 * .065$   
 $= 1.64$

Total price =  $\$26.84$

$\frac{28.00}{2.80}$   
 $25.20$

**Linear Inequalities:** Pay attention to the signs and symbols. Only when  $\times / \div$  by a negative #, **flip all** signs and symbol!!!

44. Solve the following inequalities: a)  $-4f < 36$

$FUP \pi!$   
 $-4 \quad -4$   
 $f > -9$

- b)  $4 + 11c < 2(0.5c - 4)$

$4 + 11c < 1c - 8$   
 $-1c \quad -1c$   
 $4 + 10c < -8$   
 $-4 \quad -4$   
 $10c < -12$   
 $\frac{10}{10} \quad \frac{-12}{10}$

$c < -1.2$

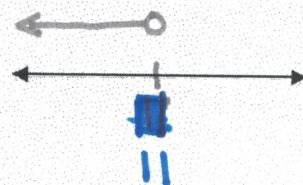


45. Solve and graph the solution on a number line.

$$k - 4 < 7$$

~~$$k - 4 < 7$$~~

$$\begin{array}{r} k - 4 < 7 \\ +4 \quad +4 \\ \hline k < 11 \end{array}$$



Solve the compound inequalities. Graph the solution set.

46.  $u + 2 \geq 1$  and  $u - 6 < 3$

$$\begin{array}{r} -2 \quad -2 \\ u + 2 \geq 1 \\ \hline u \geq -1 \end{array} \quad \begin{array}{r} +6 \quad +6 \\ u - 6 < 3 \\ \hline u < 9 \end{array}$$

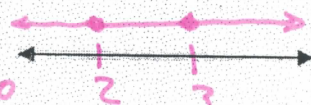
$$-1 \leq u < 9$$



47.  $g - 3 > -1$  or  $10 - 2g > 4$

$$\begin{array}{r} +3 \quad +3 \\ g - 3 > -1 \\ \hline g > 2 \end{array} \quad \begin{array}{r} -10 \quad -10 \\ 10 - 2g > 4 \\ \hline -2g > -6 \\ \hline -2 \quad -2 \\ g < 3 \end{array}$$

FLIP IT!



The Coordinate Plane:

48. For the graph provided to the right, do the following:

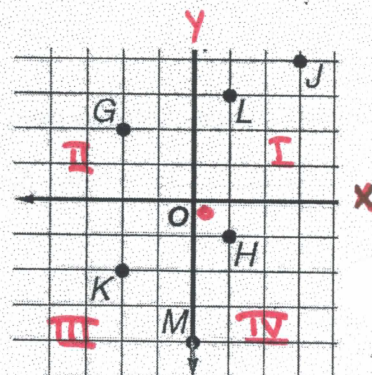
- Label the x-axis and y-axis, and the Origin (0, 0)
- Label the 4 Quadrants
- Identify the following points by their ordered pair and Quadrant (or axis):

L (1, 3) Q: I

M (0, -4) Q: Y-Axis

G (-2, 2) Q: II

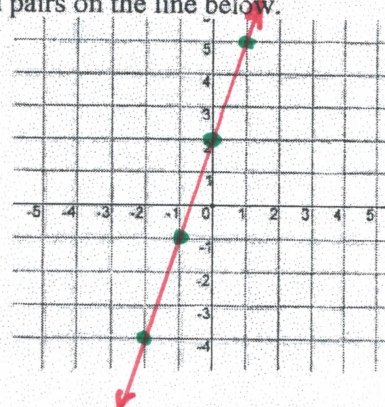
K (-2, -2) Q: III



Linear Functions:

49. (a) Solve  $y = 3x + 2$  for the given domain  $x = \{-2, -1, 0, 1\}$  and write the ordered pairs on the line below.  
(b) Graph the solution set.

x	y
-2	-4
-1	-1
0	2
1	5





**Standard Form** for linear equations is  $Ax + By = C$  ( $x$  and  $y$  terms on same side,  $A$  is not negative, only integer coefficients (no decimals or fractions), and no GCF (number that can divide into all 3 terms evenly  $\rightarrow$  reduce if possible).

50. Determine if the following equations are linear (Yes or No). If they are linear, put them in Standard Form.
- a)  $x = 4y$       b)  $6 + y = 8$       c)  $3xy + 8 = 4y$       d)  $3x = 12 - 4y$       e)  $y - 4x = 9$

### Linear Equations:

51. Find the **slope** ( $m$ ) of the line that passes through the following points.

a)  $(2, 3), (5, 7)$

$$\frac{7-3}{5-2} = \frac{4}{3}$$

b)  $(2, 8), (2, -8)$

$$\frac{-8-8}{2-2} = \frac{-16}{0}$$

UNDEFINED

c)  $(-3, y), (4, y)$

$$\frac{y-y}{4-(-3)} = \frac{0}{7} \quad m = 0$$

52. a) What type of line has the equation  $x = -7$ ? VERTICAL LINE What is its slope? UNDEFINED

- b) What type of line has the equation  $y = 2$ ? HORIZONTAL LINE What is its slope? 0

53. a) What is the formula for slope-intercept form?  $y = mx + b$

- b) Rewrite  $y = 2$  to put it in slope intercept form  $y = 0x + 2$

(Refer to Problem #62 part b)

54. Explain why the equation of a vertical line cannot be in slope-intercept form? THERE IS NO  $y$

55. Find the **slope** of the following lines:

a) Parallel to  $y = \frac{1}{5}x - 3$  \_\_\_\_\_

b) Perpendicular to  $y = \frac{1}{5}x - 3$  \_\_\_\_\_

Write an equation of the line in **slope-intercept form** that satisfies the given conditions: Remember to find/determine  $b$ !!!

56. Slope:  $\frac{1}{4}$ ,  $y$ -intercept: 0 \_\_\_\_\_

$$y = \frac{1}{4}x$$

57. A horizontal line through  $(2, 7)$  \_\_\_\_\_

$$y = 7$$



58. Passes through  $(-4, 1)$   
and  $m = -3$

$$y = -3x - 11$$

$$1 = -3(-4) + b$$

$$1 = 12 + b$$

$$\begin{array}{r} -12 \quad -12 \\ 1 = 12 + b \\ \hline -11 = b \end{array}$$

60. Convert the following equation into slope-intercept form:  $y - 5 = 2(x + 4)$

$$y - 5 = 2(x + 4)$$

$$y - 5 = 2x + 8$$

$$\begin{array}{r} +5 \quad +5 \\ y - 5 = 2x + 8 \\ \hline y = 2x + 13 \end{array}$$

$$y = 2x + 13$$

59. Passes through  $(4, 2), (-4, -3)$

$$\frac{-3 - 2}{-4 - 4} = \frac{-5}{-8} \quad m = \frac{5}{8}$$

$$2 = \frac{5}{8}(4) + b$$

$$2 = \frac{5}{2} + b$$

$$y = \frac{5}{8}x - \frac{1}{2}$$

$$2 = \frac{5}{2} + b$$

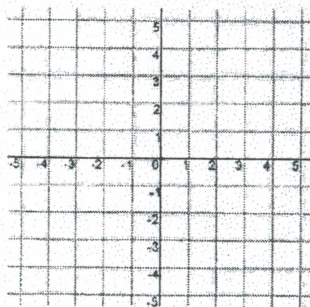
$$\begin{array}{r} -\frac{5}{2} \quad -\frac{5}{2} \\ 2 = \frac{5}{2} + b \\ \hline -\frac{1}{2} = b \end{array}$$

61. Write the **point-slope form** of an equation that passes through  $(3, 1)$   
and is parallel to  $y = -1x + 7$

Graph the following equations. Plot at least 2 points and make the line with a straight-edge.

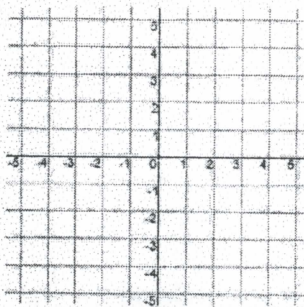
62.  $y = 3x - 4$

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_



63.  $y = -4$

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_



64.  $x + 4y = 8$  (solve for  $y$  first!!)

$m =$  \_\_\_\_\_  $b =$  \_\_\_\_\_

